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IFPMA Artificial Intelligence (AI) Ethics Principles

Supporting Toolkit

VISIT…

Overview

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Artificial Intelligence (AI) is widely used in business...

Ethics principles on Artificial Intelligence (AI)

- → Published on IFPMA webpage
- → Seeks to inform and support pharma industry **leaders** in responsible and sustainable use of AI and data ethics
- → **Baseline** for member companies to adapt and implement **AI ethics standards and policies** internally

This toolkit supports such ethics principles

- → Intended for **teams** implementing **AI and data ethics**
- → Additional resources to help the **business** enable **AI ethics** within the **business initiatives**

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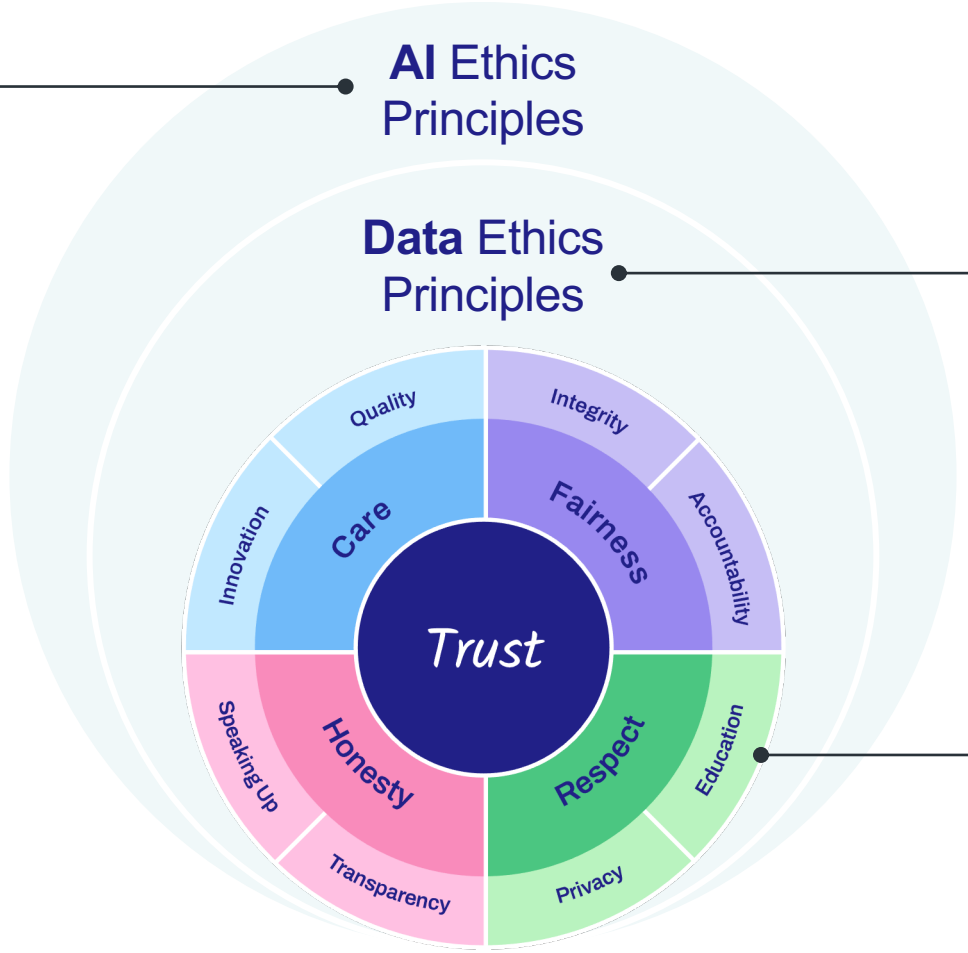
The link between Data and AI Ethics

Ethically using data in AI initiatives is key for innovation, increasing the individual wellbeing and common good.

AI Ethics principles should be considered together with the Data Ethics principles



Ethical data use helps build a culture of trust with our stakeholders.

IFPMA Ethos is the baseline where **Data** and **AI ethics** principles stand upon

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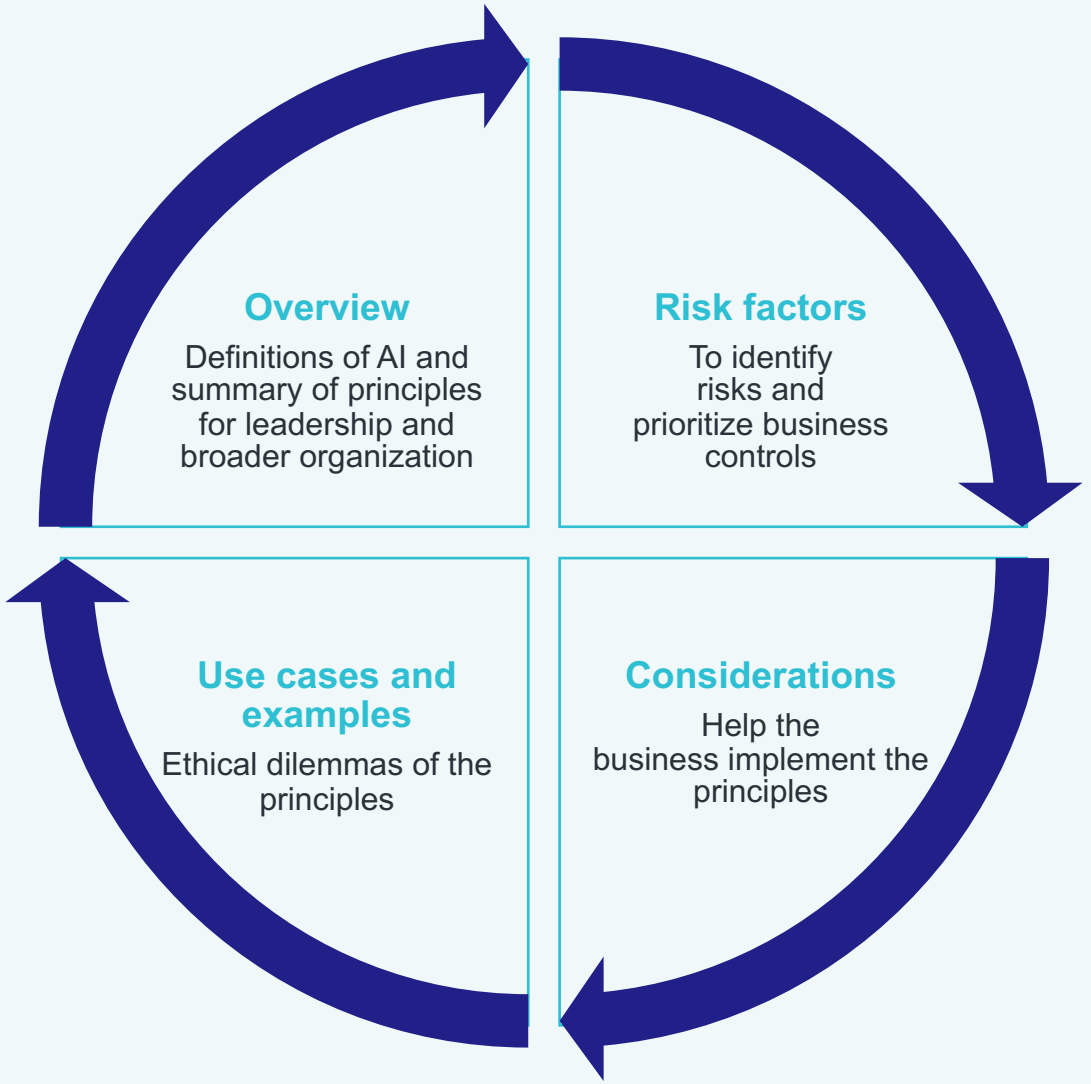
What will you find in this toolkit?

- → Different resources to help you incorporate **AI ethics into internal business processes**
- → **Use cases**, **dilemmas** to establish **ethical decision-making** processes within organizations



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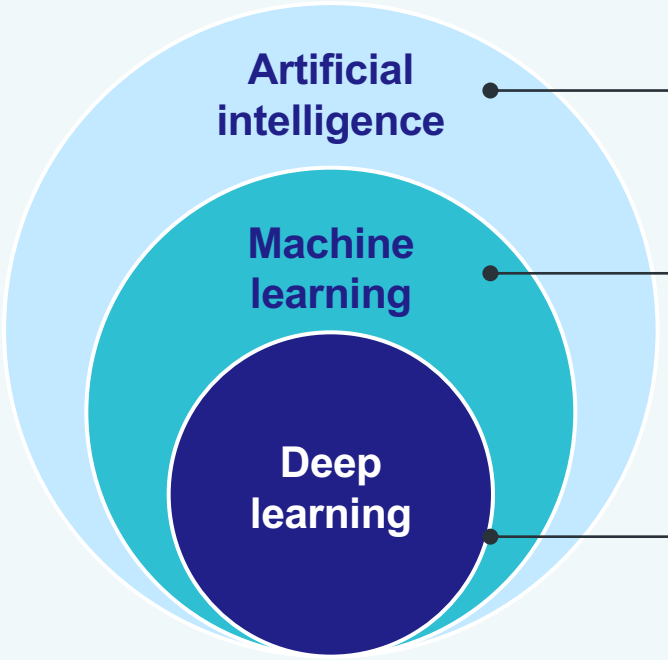
What is Artificial Intelligence (AI)?

AI Systems are the simulation of human intelligence processes by computer systems. Examples:

- → Humanoid Robot (Sophia)[1]
- → Use of self learning computerized algorithms to detect potential cardiac arrest.
- → Tracking cardiac health, fall detection, etc. via wearable health device

AI systems can generate content, predictions, recommendations, or decisions influencing the environment they interact with. Examples:

- → Clinical judgement or diagnosis from Biomedical Imaging



AI is an umbrella term for machines capable of perception, logic and learning

Machine learning employs algorithms that learn from data to make predictions or decisions, and whose performance improves when exposed to more date over time

Deep learning uses many-layered neural networks to build algorithms that find the best way to perform tasks on their own, based on vast sets of data

Humanoid Robot (Sophia) - https://www.hansonrobotics.com/sophia/ [1]

"The many ways to define Artificial Intelligence" – News Byte May 21, 2018[2]

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Why ethics in Artificial Intelligence?

Individual wellbeing and **common good**

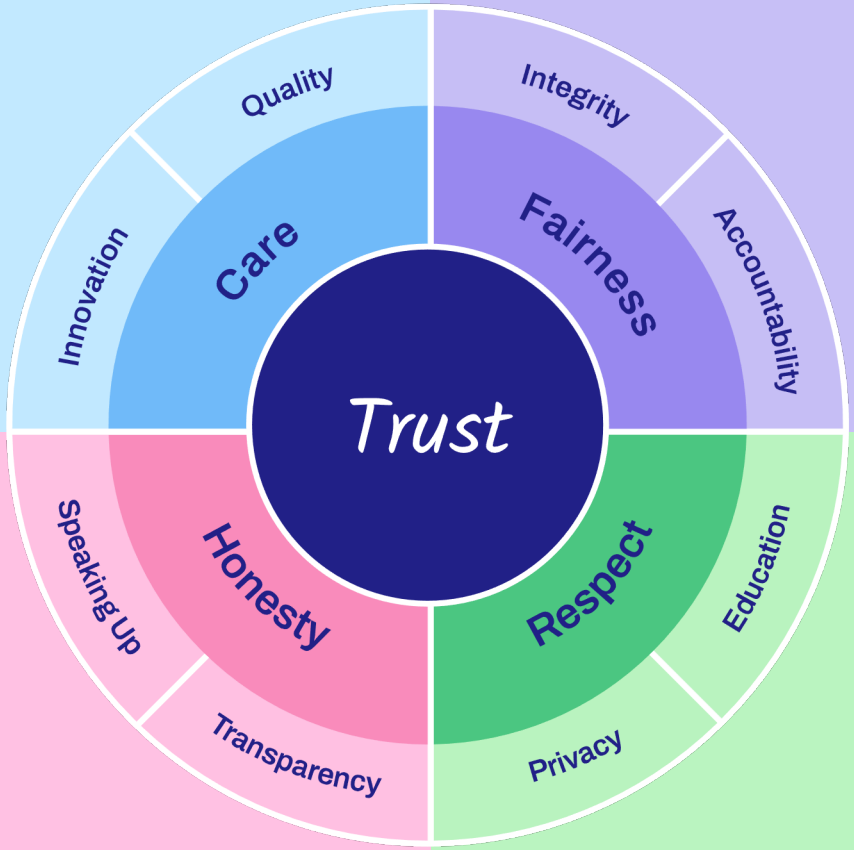
Greater **opportunities and benefits, greater risks**

Successful only if used **responsibly**

Companies should ensure AI is implemented ethically and aligned with IFPMA Ethos:

High quality AI solutions can improve global health through **innovative products and services**, upholding the highest ethical, scientific and medical standards.

Develop AI solutions **responsibly**, **ethically** and **professionally**. Be **accountable** for **AI actions** and **decisions**



Transparent communication to those impacted the use of AI.

Respect **privacy rights** and **educate** our stakeholders about **our commitment** to AI evolution in an ethical way.

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The 6 IFPMA AI Ethics principles

1. Empowering humans

Individuals impacted by AI should always **be allowed to control** the use of their personal information.

2. Fairness and minimization of bias

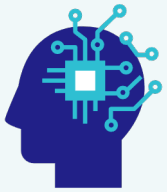
Seek to **minimize bias and maximize fairness**. Continuous monitoring and understanding to adapt AI systems to correct for bias in all AI lifecycle.

3. Privacy, security and safety by design

Data protection regulation, **technical limitations** on data re-use, **security and privacy preserving measures** (pseudonymization, anonymization, encryption).

4. Accountability

Pharma companies have proper **governance**, **risk management** system, **regular monitoring** of AI systems in place.



5. Human control

AI should not be given **complete autonomy** in **decision making**. **Freedom of choice** of end users should always be considered and respected.

6. Transparency, explainability and ethical use

Publicly describe when and how AI initiatives are used, its **goals**, **assumptions** that power an AI system, its **limitations**.

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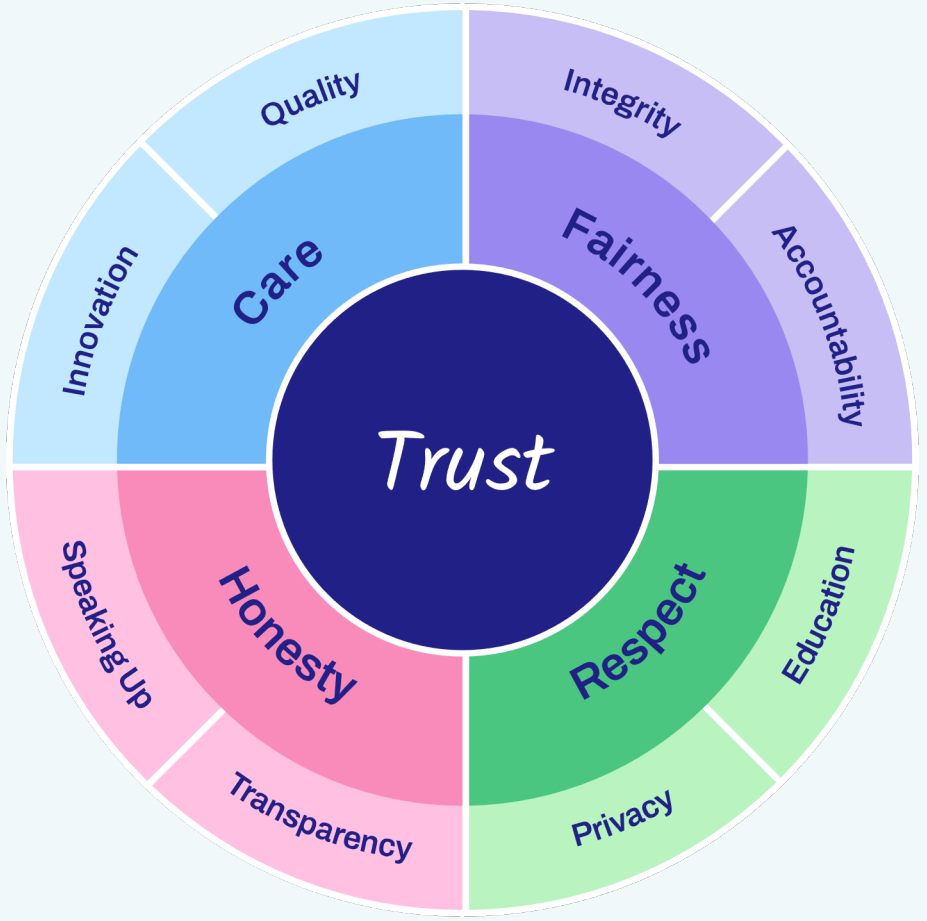
It doesn’t end here…

- AI Ethics is an **ongoing journey**.
- Ensuring there are always ethical AI systems in an **inclusive exercise** that will involve different functions.
- **AI Ethics programs** need to be **continuously revisited** to consider evolving technologies and specific applications.
- **AI Ethics** is a process, it requires assessment of corporate **maturity**, **risks**, and customizing materials for each specific **audience**.
- Setting an **open and transparent culture** in the delivery models and **governance** will lead to optimal solutions.
- **Culture** of each organization in embracing **compliance** plays a significant role in **successful implementation** of **ethical** and **responsible AI**.



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Risk factors, considerations and use cases

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Ethical considerations for successful AI initiatives

Embedding AI ethics principles effectively requires a robust identification, prioritization and management of **AI risks** during the AI project life cycle.

AI brings greater opportunities and benefits coupled with greater and potentially new risks.

Examples of critical risks (not exhaustive):

- → The AI output can have an error rate and therefore make an incorrect decision that can **harm the patient's health**
- → Potential **cyberattacks and breaches** on AI solutions
- → **Consent** of **the data use**, **protection** and the justification of **data retention** for a prolonged period
- → **Misuse** of the AI solution leading to **loss of trust**
- → Disproportionate AI controls **slowing innovation**

To proceed further in a both ethical and pragmatic manner there are several key ethics considerations and risks in addition to having organizational business processes, SOP, policies, guidelines (but not limited to) for you to know when working on any AI initiative.

These considerations ensure AI initiatives are aligned with the basic elements of **Corporate Compliance Programs**.

Use this document as a reference for consideration during an initial assessment of your AI initiative.

Find the full document here.

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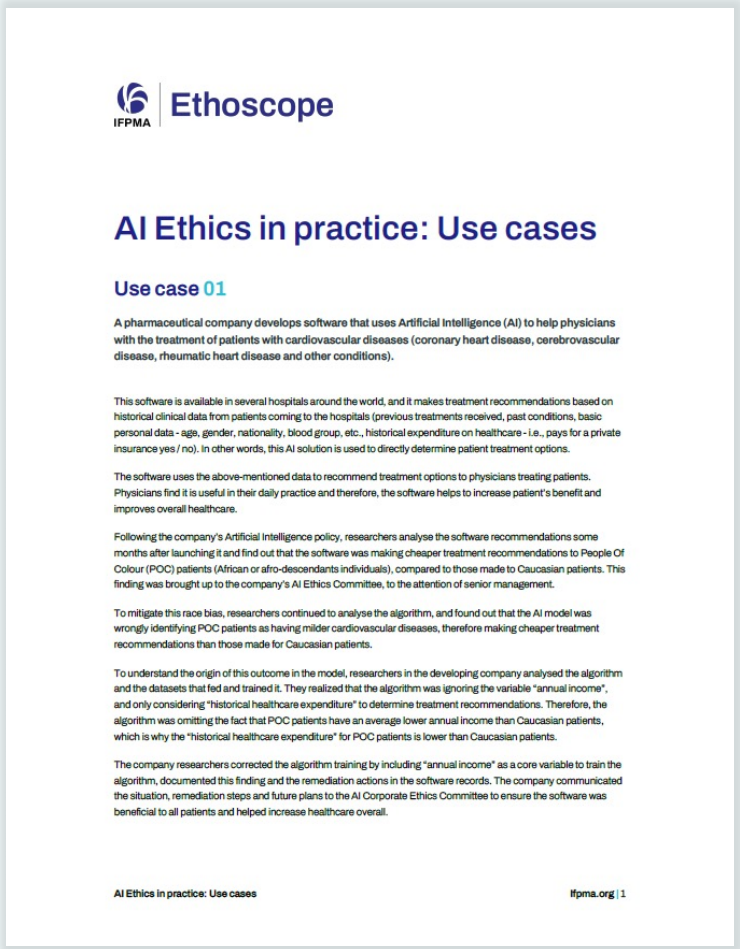
AI Ethics in practice:
Use cases

Here are a few use cases for you to help bring the AI Ethics principles and considerations to life. These use cases are examples of how the principles can be put in practice. Each use case addresses:

- → **Possible situations** where AI could be applied in the Pharmaceutical Industry
- → **Impact** of AI and the underlying ethical **dilemmas**

You can use this document as a reference for consideration when planning AI initiatives. Irrespective of the lifecycle stage where AI is used, the principles and robust risk management are equally relevant.



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AI Ethics in practice: Use cases

Use case 01

A pharmaceutical company develops software that uses Artificial Intelligence (AI) to help physicians with the treatment of patients with cardiovascular diseases (coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions).

This software is available in several hospitals around the world, and it makes treatment recommendations based on historical clinical data from patients coming to the hospitals (previous treatments received, past conditions, basic personal data - age, gender, nationality, blood group, etc., historical expenditure on healthcare - i.e., pays for a private insurance yes / no). In other words, this AI solution is used to directly determine patient treatment options.

The software uses the above-mentioned data to recommend treatment options to physicians treating patients. Physicians find it is useful in their daily practice and therefore, the software helps to increase patient's benefit and improves overall healthcare.

Following the company's Artificial Intelligence policy, researchers analyse the software recommendations some months after launching it and find out that the software was making cheaper treatment recommendations to People Of Colour (POC) patients (African or afro-descendants individuals), compared to those made to Caucasian patients. This finding was brought up to the company's AI Ethics Committee, to the attention of senior management.

To mitigate this race bias, researchers continued to analyse the algorithm, and found out that the AI model was wrongly identifying POC patients as having milder cardiovascular diseases, therefore making cheaper treatment recommendations than those made for Caucasian patients.

To understand the origin of this outcome in the model, researchers in the developing company analysed the algorithm and the datasets that fed and trained it. They realized that the algorithm was ignoring the variable "annual income", and only considering "historical healthcare expenditure" to determine treatment recommendations. Therefore, the algorithm was omitting the fact that POC patients have an average lower annual income than Caucasian patients, which is why the "historical healthcare expenditure" for POC patients is lower than Caucasian patients.

The company researchers corrected the algorithm training by including "annual income" as a core variable to train the algorithm, documented this finding and the remediation actions in the software records. The company communicated the situation, remediation steps and future plans to the AI Corporate Ethics Committee to ensure the software was beneficial to all patients and helped increase healthcare overall.

AI Ethics in practice: Use cases ifpma.org | 1

Find the full document here.

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